

SARS-CoV-2 Antibody Semi-Quantitative Levels Is Important In The Management Of COVID-19 Vaccinations In Immunodeficiency Patients

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Background

The efficacy and durability of SARS-CoV-2 immunological antibody response in Immunodeficiency Disorder (ID) patients (primary ID and acquired ID), can be utilized in their clinical management to avoid COVID-19 infection. We correlated SARS-CoV-2 antibody semi-quantitative test results with ID patients' COVID-19 vaccinations, their timing, IVIG infusions, and clinical outcomes.

Methods

Retrospective EMR database review of ID patients from January 2021 to August 2022 tested by the semi-quantitative GenScript SARS-CoV-2 Neutralization Antibody Test. Statistical analysis of compiled data included the correlation between antibody titer test results, vaccinations, IVIG therapy, and chart review for COVID-19-related health outcomes.

Table 1. Antibody Data in ID patients (1/2021-8/2022) (n=99)	
Positive antibody titer after initial vaccine course	76
Negative antibody titer after initial vaccine course	23
PID	32
ID NOS	67
IVIG therapy	39
Evusheld	23
COVID-19 +	19
COVID-19 Hospitalization	0
COVID-19 deaths	0

Summary Statement

Immunodeficiency disorder patients may have blunted humoral immune response to COVID-19 vaccines and therefore requires monitoring with quantitative SARS-CoV-2 antibody testing for optimal immunological management.

Additional Findings

- Patients with low-moderate antibody titer levels were scheduled for additional boosters (Low = <47 Units/mL, Moderate = 47-185 Units/mL, High = >185 Units/mL).
- 2 pts failed to achieve even low titer levels despite more than 4 boosters (these 2 patients received Evusheld).
- COVID-19 booster vaccinations were scheduled more frequently and with shorter intervals in ID patients.
- Sustained high antibody levels typically persisted from 3 to 6 months.
- ID patients receiving IVIG tended to have longer sustained antibody titer than non-IVIG ID patients and had slightly higher AB levels in 2022 compared to 2021.
- SARS-CoV-2 antibodies detected in IVIG products in 2022.
- None of the patients in this study population were hospitalized or died due to COVID-19 during the period of study.

References

- Mahmoud, S., et. al. Serological Assays for Assessing Postvaccination SARS-CoV-2 Antibody Response. *Microbiol Spectr.* 2021 Oct 31;9(2):e0073321.
- GenScript Instruction for use (IFU). "cPass SARS-CoV-2 Neutralization Antibody Detection Kit". Version 7.0. Update 2022.02.01.

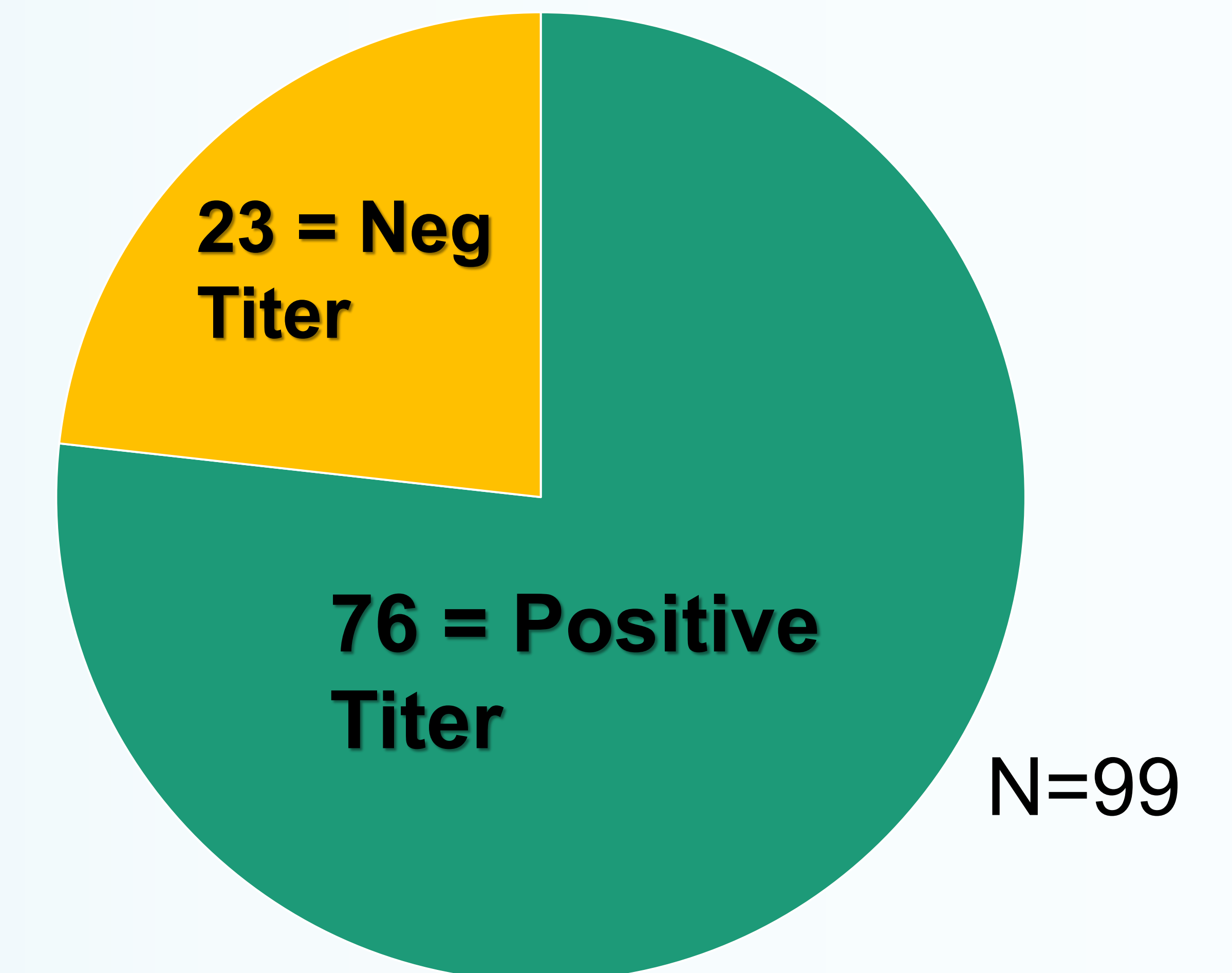


Figure 1. Antibody Response After Initial SARS-CoV-2 Vaccine Course

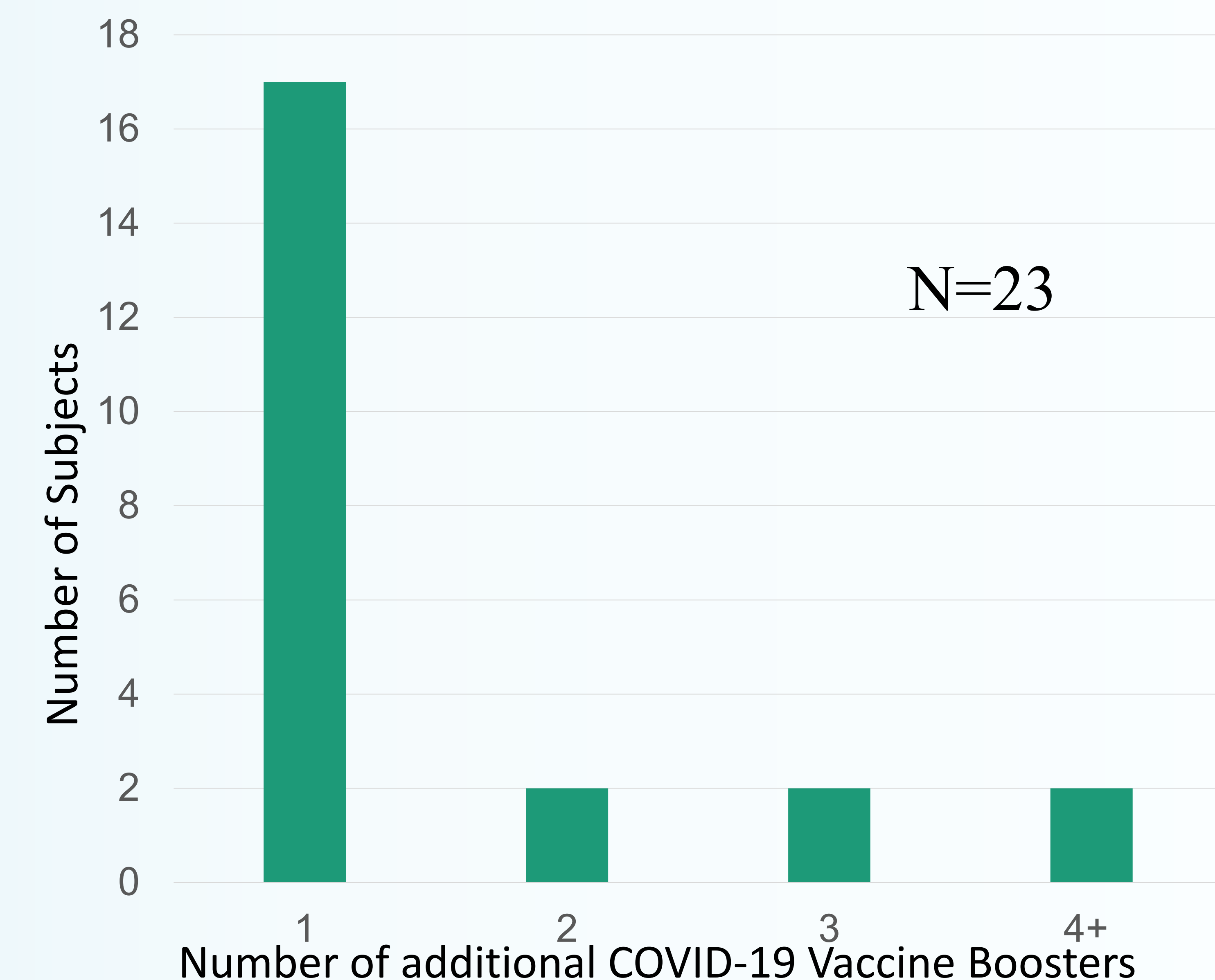


Figure 2. Number of additional boosters needed to achieve positive antibody titers within 1-2 months after initial full course

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